



400Hz STATIC FREQUENCY CONVERTER



Introduction

With years of experience in designing and manufacturing UPS and frequency converter system, we had completed our frequency converter series by static frequency converter using for industrial application. LISA SFC static frequency converter series are outcome of combination between state of the air technology and our excellent experiences. We had created distinguish products by employment of advanced technological components, and take the simplicity of working for main feature.

LISA SFC provides maximum protection and power quality for mission critical loads with maximum reliability. SFC is designed with a transformer isolated inverter, so it provide completed protection for your load.

A rectifier transforms the AC voltage into a continuous stabilized DC link voltage, to power the IGBT inverter that transforms the continuous voltage into a 50Hz or 60Hz alternating sinusoidal stabilized voltage with a PWM modulation. The output inverter voltage feeds a transformer which on its output has the filter capacitors. The output voltage is

sinusoidal with a distortion of 2%. The output has an electronic stabilization both in voltage and in frequency.

Features

- CE Mark Certified
- State of the art semiconductor technology (IGBT)
- High efficiency (up to 95% efficiency)
- Voltage Compensation (load dependent or via Remote feedback)
- No Break Power Transfer Compatibility (NBPT)
- Data logging
- IP54 enclosures for outdoor use in extreme environmental conditions
- Green Standby Function
- 28VDC, 600 A output / 2000 A Crank with DC and AC output working simultaneously (Optional)

Standards

- DFS400 Specification for 400 Hz aircraft power
- ISO 6858 Aircraft ground support electric supplies
- MIL-STD-704 Aircraft electric power characteristics
- SAE ARP 5015 Ground equipment 400 Hz ground power performance requirement
- EN62040-1-1 General & safety requirement
- EN61558-2-6 General & safety requirement
- EN61000-6-4 Electromagnetic compatibility - Generic emission standard
- EN61000-6-2 Generic immunity standard

High efficiency

LISA SFC has no moving parts, except for the fans to cool the systems down, and is highly efficient units (up to 95% efficiency). Our High frequency IGBT Technology (Rectifier and inverter) guarantees a perfect sine-wave input with low THDi (THDi <1.5%) and unitary power factor (PF=1), perfect for all sorts of extreme electrical conditions (compatible with Genset output). The advantages of this technology are:

- Fast response to load changes
- Quiet operation
- Reduction in size and weight



- High efficiency – low heat losses
- Short circuit protection

Control Panel

The control panel consists of a mimic panel that displays the flow of power from the input to the output and a liquid crystal display - LCD (two rows of 40 characters). The display shows the event history log up to 120; the measurements and associated alarms are recorded for each event

Custom version

We realize custom apparatus according to customer's technical data employing the standard series sets and therefore with experimented feature:

- Fixed or variable input voltage
- Fixed or variable output voltage
- Stainless steel enclosure and IP54 protection
- Drop line compensation
- Additional 28VDC module output
- Parallel version
- UPS version
- Trolley version

Application

When aircraft are parked at airport terminal stands with their engines shut down they require a reliable and controlled supply of 400Hz power at 200V to be supplied from an external source. This power is used to support the aircraft on-board electrical systems whilst the aircraft remains at the terminal. Our frequency converter is connected to the normal 3 phase mains power source and delivers an output of 200V 3 phase 400 Hz power to the aircraft through a special flexible cable. The converter is only switched on when the aircraft needs the power, it also has a built in feature that allows the converter to synchronize with the on board aircraft power system so the lights, air conditioning system and the avionics continue operating during the change over from aircraft power to the external converter power. The frequency converter eliminates noise and air pollution, unnecessary fuel consumption and contributes to the reduction of maintenance needed on the APU, generators and batteries.

We can also provide a combination system in a single enclosure with a 3 phase 200V 400Hz output and with a secondary output of 28V DC 600Amps with peak of 2000A for helicopter engine starting and battery charging.



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Technical data sheet the SOJI GPU						
MODELS	GPU30	GPU45	GPU60	GPU90	GPU120	GPU200
INPUT						
Nominal voltage	3Phase 200VAC/400VAC/480VAC					
Voltage tolerance	± 15%					
Nominal frequency	45Hz to 65Hz ±5%					
Input current harmonics	< 3% at full load (sinusoidal)					
OUTPUT						
Nominal power (kVA)	30	45	60	90	120	200
Active power (kW)	30	45	60	90	120	200
Voltage	200VAC 3 phase (other voltages available on request)					
Static regulation 0 -100% load	±1%					
Dynamic regulation 100%	±5%, recovering to 1% within 40 millisecond					
Frequency	400Hz					
Frequency stability	±0.01% Crystal controlled					
Overall Efficiency	87% – 95%					
Max crest max	3 : 1					
RECTIFIER						
AC Voltage Range	-25% +10%					
Efficiency	93% - 97%					
Input Frequency Deviation	± 5%					
Overload capacity	120% continuous					
Current walk in	5 seconds to maximum					
Overall current limits	120%					
INVERTER						
Total harmonic distortion	< 3% linear load					
Overload	120% for 60s, 150% for 5s, 200% for 2s					
Waveform	Sinusoidal					
Load power factor	0.7 - 1					
Efficiency	93% - 98%					



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INFO FOR INSTALLATION			
DIMENSION (WxDxH) mm	700 x 750 x 1250	700x800x1575	1600x1000 x2000
Remote signal	Dry contact		
Ethernet connection	Standard with NetAgent		
CAN (with Remote Panel)	Optional		
Temperature range at sea level	- 40°C to + 55°C (full load) 30°C at 2000m (full load)		
Relative humidity	< 90%		
Noise level	< 65dbA at 1meter		
IP rating	IP20 (IP42, IP54 optional)		
Altitude	Up to 2500m		
Standards	DFS400; ISO 6858; BS 2G 219; MIL-STD-704; SAE ARP 5015; EN62040-1-1; EN61558-2-6;En61000-6-4; EN61001-6-2		